REMARKS

Claims 1 and 4-74 are currently pending in the application. Claims 1, 35, and 63 are independent claims. The rest of the claims depend on one of the independent claims and therefore include their respective limitations.

The Office Action rejected claims 1 and 4-74 as either anticipated under 35 U.S.C. § 102 by U.S. Patent No. 5,883,553 to Tsumura ("Tsumura"), or obvious under 35 U.S.C. § 103 over the combination of Tsumura and at least one of U.S. Patent No. 5,170,500 to Broderick ("Broderick"), U.S. Patent No. 5,195,045 to Keane et al. ("Keane"), and U.S. Patent No. 6,177,872 to Kodulkula et al. ("Kodulkula"). *See* Office Action at 2-10 (setting forth rejections of the claims). For at least the reasons articulated below in detail, the Applicant respectfully submits that the Office Action fails to set forth *prima facie* anticipation and obviousness rejections of the respective claims.

Independent claims 1, 35, and 63 (and therefore the dependent claims) include limitations that recite circuitry with differential input and/or output. The Applicant respectfully submits that none of the cited prior art teaches or suggests those limitations. Thus, none of the references, or any combination of the references, may form the basis of a proper rejection of any of the claims.

Specifically, the Office Action states:

> The applicant mainly argues that (i) with respect to claims 1, 35, 63, Tsumura does not disclose the filter output (outputted from filter (21) (see figure 3)) as being a differential output, the impedance matching network input (inputted to impedance matching network (31)) as being a differential input, and the impedance matching network output (outputted from impedance matching network (31)) as being a differential output; and (ii) Tsumura does not disclose that the filter (21) receives radio input signal and provides a radio output signal.

Office Action at 10. The Office Action then asserts:

> Regarding to part (i), the examiner respectfully disagrees. Tsumura discloses that the filter (21) is a conventional filter being implemented with passive elements (see col. 1, lines 18-23 and col. 4, lines 16-19). Such a conventional filter inherently comprises the input

> as a differential input, which includes *two input ports connected to two lines for receiving an input signal and its return signal* for filtering said input signal, and the output as a differential output, which includes *two output ports connected to two lines for outputting the filter signal and obtaining its return signal.*

Id. at 10-11 (emphasis added).

As purported support for those assertions, the Office Action cites a portion of the book EDWARD A. WOLFF ET AL., MICROWAVE ENGINEERING AND SYSTEM APPLICATIONS 242-43 (1988) ("Wolff"). Specifically, the Office Action states:

> In order to clarify this matter, the examiner now cites Woff et al, "Microwave Engineering and System Application" teaching such a conventional filter (see figure 9.7, and page 242). Therefore, Tsumura filter output (outputted from filter (21) see figure 3)) is *inherently a differential output.* Further, since in Tsumura, the impedance matching network (31) has its input being coupled to said filter at said filter's output in order to impedance-match said filter output with a further processing stage (see figure 3 and col. 4, lines 28-48), the impedance matching network input, therefore, *must also be a differential input* in order to be coupled with said filter output (being a differential output, as explained above), and the impedance matching network output *must, therefore, be also a differential output* in order to correspond with said impedance matching network's input. For clarifying the features of such a matching network, the examiner now cites Keane et al. (prior art of record) teaching a matching network (220a) comprising matching network *differential input (222a, 223a) coupled with differential output (224a, 225b)* coupled with a further processing state (2300) to match said device (40) with said further processing stage (see figure 1 and 2A and col. 6, line 55 to col. 7, line 60).

Office Action at 11 (emphasis added).

The Applicant respectfully disagrees. First, as the Applicant has noted in a response to a previous office action, to the Applicant's understanding, none of the cited references teaches or suggests the differential input and/or differential output limitations. The Office Action appears to assert that the references, e.g., Tsumura, inherently teach differential outputs and inputs. As noted, the Applicant cannot find any support in the references for that assertion. Tsumura merely shows

block diagrams and fails to teach or suggest that the blocks include circuitry with differential inputs and/or outputs. If the Office believes that any of the cited references inherently teaches differential inputs and/or outputs, the Applicant respectfully requests that the Office properly support that belief. The Office has the burden of setting forth proper rejections of the claims. To carry that burden, the Applicant respectfully requests that the Office produce *concrete evidence* for its contention of inherency (e.g., an examiner's declaration).

Furthermore, the Applicant respectfully submits and submits that the passages in the Office Action quoted above miscomprehend the nature of circuits with differential inputs and/or differential outputs, and the teachings of the cited references. Contrary to the Office Action's assertions, the cited references teach circuits with single-ended, rather than differential, inputs and/or outputs.

Viewed as a commonly understood networks, the disclosed circuits have two ports, an input port, and an output port. Single-ended ports have a signal line and a reference line (e.g., circuit ground) or, in the Office Action's terminology, a "return line." In fact, the Office Action highlights the single-ended nature of Tsumura's circuits. Specifically, the Office Action states that the circuit includes "two lines for receiving an input signal and its return signal" and "two lines for outputting the filter signal and obtaining its return signal."

Furthermore, single-ended passive networks lack symmetry. For example, the cited figure in Wolff, i.e., figure 9.7, shows a circuit with passive elements that lacks symmetry, viewed from the perspective of the signal lines of the input and output ports. That property highlights single-ended nature of that circuit. In other words, the impedance in the passive network from the signal line at the input or the output to the reference line or return line is asymmetrical.

In contrast, a port of a passive differential circuit includes two signal lines referenced to a reference potential or node (commonly the circuit ground). Furthermore, a passive differential network includes symmetrical circuitry, i.e., symmetrical impedances from each of the signal lines at the input or output port to the reference node. Put another way, the circuit topology to the reference node for each of the two differential signal lines of the port is the same. For example, figures 17A-17D, 18A-18B, 19A-19B, and 20 of the Applicant's application each show input ports with two

signal lines, and output ports with two signal lines. From the perspective of the input and output port signal lines, each figure shows a symmetrical circuit.

As another example, figure 21 and its corresponding description in the Applicant's patent application describe a differential input and a differential output. Specifically, the application states at page 81, lines 9-16 (emphasis added):

> FIG. 21 shows an embodiment 2100 of a general differential transmission line for use in matching networks according to the invention. The differential transmission line includes *an outer shield or layer 2105 and two inner conductors or elements* 2110 and 2115. The *outer shield 2105 may couple to a reference potential 2125, such as circuit ground.* The *inner elements 2110 and 2115 conduct differential electrical signals* through the transmission line.

The description makes clear that the Applicant's differential circuits include two signal lines, at the input and/or the output, referenced to a reference potential or ground. None of the cited references teaches or suggests the claimed differential input and/or output limitations. Thus, the references fail to form the basis of proper anticipation or obviousness rejection of the independent claims and, by implication, the dependent claims.

Because of at least the reasons described above, the Applicant respectfully submits that the presently pending claims are allowable. The Applicant therefore respectfully requests a prompt Notice of Allowance.

CONCLUSION

Claims 1 and 4-74 are pending in the application. The Applicant submits that the claims are in condition for allowance, and requests reconsideration of the application and a prompt Notice of Allowability. With the exception of the petition for an extension of time, the Applicant believes that no additional fees are due in connection with this paper. Should any fees under 37 CFR 1.16-1.21 be required for any reason relating to the enclosed materials, however, the Commissioner is authorized to deduct such fees from Deposit Account No. 10-1205/SILA:107.

The examiner is invited to contact the undersigned at the phone number indicated below with any questions or comments, or to otherwise facilitate expeditious and compact prosecution of the application.

Respectfully submitted,

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